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Kansas State Teachers College

THE EDUCATIONAL LEADER

COMMERCE AND BUSINESS ADMINISTRATION
and MATHEMATICS NUMBER

Published by the Faculty of the
KANSAS STATE TEACHERS COLLEGE
PITTSBURG, KANSAS

Vol. 3 MAY, 1940 No. 4

In the Arkansas Ozarks, a scenic drive by automobile.

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The Educational Leader

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Engineering and Technical Courses At Kansas State Teachers College

J. A. G. SHIRK

The purpose of this article is to show the effects of training together students who are preparing themselves along technical lines and students who are preparing themselves to teach. The evolution of technical instruction in this institution will be traced, special consideration being given to the value a teachers' college receives from having technical students in its midst.

The development of technical courses in Kansas State Teachers College was brought about by two causes: first, there was a change demanded in the preparation for teachers of mathematics, science, and industrial arts in the public schools; second, there was a great need of technically trained men in the mines and industrial plants of this section of Kansas.

The first reason given will be quite apparent to anyone who has carefully followed the trend of public education during the past thirty years. Gradually there has been developing in the consciousness of the citizens of this nation a feeling that a high school education should be sufficiently diverse to meet the needs of all children of the community and not just the needs of those children who expect to enter professional life. In response to this sentiment, better buildings were erected, higher standards of teachers established, and new types of work were introduced into the school curriculum. Manual Training courses were rapidly developed in every progressive high school, and the necessary cooperation of other departments with this work created a new emphasis on the practical phases of mathematics and science. This work, later called industrial arts, has been greatly extended and brought closer into direct relation with the trades and industries which the students will later enter.

The night schools which were established in the industrial communities were first of a general aca-

demic nature, but quite soon they were brought into the closest possible contact with the commercial and industrial occupations located in each district. On account of this change in both the day and evening schools, there was a considerable change in the qualifications demanded of teachers. The use of power machinery in the industrial arts departments made it necessary that the teacher of industrial arts be somewhat familiar with gas and gasoline engines, electric motors and generators, electric wiring, and many other topics of a technical nature. This need was recognized by this institution as early as 1912, and during that year and the one following, courses in mechanics, electrical machinery, gas engines, and electric wiring were introduced. These courses met with a very gratifying response from the young men who recognized the necessity of this information as an aid to the proper care and operation of machinery in their shops. The prospective teachers of physical science also found such courses exceedingly valuable in making their work more attractive to the boys of their respective schools.

These courses of an elementary engineering character were strengthened, and others were added in order that this institution might keep to the front in the proper training of teachers of all subjects which are connected with vocational education.

But even before these practical courses for teachers were started, there was such a demand for instruction in subjects relating to mining and other industrial occupations among the men of this region that special night classes in these subjects were organized as early as 1910. These classes were carried on without any expense to the state, as a few teachers were glad to contribute some of their evenings to this much needed work. This evening instruction was greatly expanded during the next eight or ten years until it was conducted at so many different places that it was available to practically the entire mining section of Southeast Kansas.

The nation-wide emphasis on technical instruction, brought about by our participation in the World War, made it necessary to engage actively in practical education not only for the training of teachers but also for the training of young men to help make our industrial occupations more efficient. Accordingly in the spring of 1918 several types of technical curricula of a vocational character were formulated and printed in a special technical bulletin and put into operation in September. Most of the subjects included in these curricula had previously been given for the training of practical teachers of industrial arts, sciences, and mathematics.

Five types of curricula were offered, any one of which could be completed in two years by a high school graduate. Courses in civil engineering, chemical engineering, electrical engineering, mechanical engineering, and mining engineering were the ones which were found to meet the needs of this section of

Kansas. Young men who desired to follow either the practical work of these engineering vocations or who wished to teach practical subjects in high schools found these two-year curricula of great value. These curricula were also of great value to the rehabilitation of the disabled World War veterans but were dropped after about ten years as more students became interested in standard four year engineering preparation.

Most of the work done in evening classes did not require high school graduation as a prerequisite, and was therefore vocational and trade instruction. This included classes in mining, steam engines, electrical machinery, armature winding, machine shop practice, automobile mechanics, drafting, applied mathematics, and applied science. For these classes teachers who had practical trade experience were selected in order that the instruction might be more valuable to the students attending them.

In addition to the types of technical instruction mentioned, the first two years of most of the standard four-year engineering courses were offered. This work was composed mostly of the regular college courses in mathematics, physics, chemistry, economics, and English, together with classes in mechanical drawing, shop-work, steam power, and surveying. These applied courses were found to be very valuable for the training of practical teachers of mathematics, physical sciences, and industrial arts.

It was also found that the presence of engineering students in the classes with prospective teachers was a distinct advantage to both. Students expecting to teach were brought into contact with the practical point of view of technical students and, consequently, the prospective teachers were more likely to give that practical application and emphasis which is so vital to the teaching of mathematics, physical sciences, and industrial arts. Those teachers who have associated with technical students in both their academic and applied courses, and who have taken quite a number of the technical courses, will probably continue to have close contact with trades and industries and thus bring to their classes a clearer knowledge of the purpose and usefulness of the subjects being considered. High school teachers should conduct their courses in such a way that they will be of value to boys and girls who have various vocational objectives, and the ability of teachers to present subjects to mixed classes such as have been described, is acquired much more readily if their college preparation has likewise been taken in such mixed classes.

The technical students do not suffer in the least from this association, but on the contrary are helped and stimulated by the good methods which must be employed by the college teachers who realize that the student who later enters into the teaching profession will probably unconsciously use the methods which he has daily observed.

It has also been found that many young men who enter engineering courses are not certain that this is the vocation which they desire to follow. Consequently, when they come to appreciate the opportunities for service which can be rendered by an efficient teacher who is prepared to vitalize his subject by the many possible practical applications, they often change their objective to teaching and become some of the strongest teachers.

This brief sketch of engineering and technical work at this institution is concluded with the summary of the reasons why the continuation of technical work is valuable to a teacher training program:

1. The presence of technical students stimulates the instructor and the prospective teacher to more practical thinking.

2. The association with the technical students in mixed classes gives prospective teachers an ability to continue contact with technical work after entering the teaching profession and thereby make their teaching more valuable.

3. The presence of technical students keeps our college instructors more closely in contact with industrial affairs and makes our teaching more in accord with modern industry.

4. Many of our strongest graduates who are teaching changed their objective to teaching when they acquired a conception of the social value of a well-trained practical teacher.

Yours Truly

ROWENA WELLMAN

Millions of letters daily carry vitiated expressions, such as "Dear Sir," "Gentlemen," "Dear Madam," "Very truly yours," and "Respectfully yours," established by usage but desiccated by use. Why do these forms endure? Are they relics of the disciplinary and obsequious conventions observed in "With the compliments of the Captain, Sir" and "I remain, Sir, Your Respectful and Obedient Servant"? Are they desirable embellishments in a written message? Their evolved function appears to be merely structural. The salutation is but a mechanical conduit to direct the reader's attention to the body of the letter. The complimentary close is an exit for the writer. Both are meaningless and superfluous.

Is a telegram less welcome because it omits the courtesies of salutation and closing? Is a bulletin less acceptable, a memorandum less effective, because of these omissions? To discard them would be a desirable step toward streamlining written communications. If none of the expressions conveys the meaning of personal regard, why persist in employing them? To do so is to cry "Wolf" too often. When a writer has occasion to say what he means and to mean what he says, he finds no potency in "Gentlemen," "Dear," "Truly," "Respectfully," and "Cordially." Ordinarily these terms fall into one of three categories:

1. They are honest designations of affection or respect and are justifiably retained. In such cases, however, the content and tone of the letter should substantiate their connotation.

2. They are empty phrases. They might as well be called by the names of Sophie Kerr Underwood's two cats—"Useless" and "Worthless." As pets they may be cherished in some realms; but in business communication do these relics deserve indulgence?

3. They are insincere to an extreme, as in letters of complaint, reprimand, and bad-debt collections.

The regular omission of such conventions would dispense with many problems in letter writing. To be correct a writer must be master of a system of usage posited on inconsistencies and uncertainties. For example, "Dear Sir" is acceptable; "Dear Sirs" is not. "Gentlemen" is preferred to "Sirs." "Sirs" is good in England but is not in favor with some American authorities. Yet a large proportion of letters to the editors in a widely circulated magazine are introduced by "Sirs" in the printed columns. Possibly the editors set that pattern. "Madam" is the correct salutation for a wo-

man and "Mesdames" for women. "Ladies," preferred by some authorities, is not recognized by others. "Dear Mr. Smith" is less formal than "My dear Mr. Smith" in American usage, not so regarded by the Englishman.

In dictating or typewriting a letter directed to a business firm, but marked for the attention of a particular member, a writer composes the message with that person in mind. He is prone to slip to the personal salutation. The Book says the salutation must be "Gentlemen." Does it really matter? Does it matter, too, that the Book says the attention line must go above the salutation—or possibly aligned with the salutation? Inspection of business mail reveals heretical practice, for we have noted some letters with the attention item placed below the salutation.

The Book tells us that a complimentary closing is incorrect if the word "yours" is omitted. "Cordially" or "Respectfully" or "Sincerely" is not sufficient. One must write "Cordially yours" or "Respectfully yours" or "Sincerely yours."

How should one "salute" the famous restaurant known as Twenty-one? If the official name, Jack and Charlie's, is used in the address, is the salutation to be "Gentlemen"? Would "Messrs. Jack and Charlie, 21 West Fifty-second Street," command the same salutation? Is "Gentlemen" equally correct for the restaurant itself and for the individuals? Is "Mesdames" to be courtesy title as well as salutation for Yvonne and Antoinette in a letter written to their beauty salon? If Yvonne and Antoinette are unmarried, the following form is obviously absurd:

> Mesdames Yvonne and Antoinette,
> Fashion Building,
> Chicago, Illinois.
> Mesdames:

Hunter College (for women) met a telephone inquiry about the correct salutation for that organization by naming the Registrar and suggesting that the inquirer write directly to her.

That bucolic patriot who wrote "Dear Friend" to the President of the United States violated textbook precepts and official and diplomatic etiquette. But he exemplified the spirit of Democracy and, with unconscious flattery, reciprocated the President's customary audience-salutation. Furthermore, the letter manifested sincerity, a desirable attribute in all correspondence. To be genuine is sometimes better than to be proper.

What, after all, are the essential parts of a letter? A letter is adequate if it contains two Who's, two Where's, and When and What. "Dear" and "Yours" are not essential. A letter fulfills its function when the following are present:

- Date
- Name and address of person (or firm) to whom the letter is written
- Name and address of person (or firm) writing the letter. (Usually printed as letterhead)
- Signature of the writer, and in some cases his title or capacity, as evidence of authenticity

How does a letter look without the nonessential salutation and complimentary close? Good! It gives a physical appearance of compactness. It gives a psychological impression of directness. It is orderly, complete, courteous, and efficient. It is streamlined.

EFFECTIVE ARRANGEMENT

Judgment rather than measurements should guide the writer to achieve artistic appearance in a letter. Cognizant of approximately how much he wishes to write, he should train himself to visualize the completed letter before it takes physical form. By thus projecting the imaginary mass on the stationery, he predetermines the area of the margins. The stenographer has an advantage here, for there is a fairly consistent ratio between the space occupied by shorthand notes and the amount of space that will be required in the finished typewritten form. By checking a post-evaluation against his pre-guess, a typist can become skillful in estimating the proportions of space requirements from shorthand, longhand, or mental composition.

It is unfortunate that many teachers of typewriting and stenography tell their students the counted number of words in a given task and adhere to a formula for letter placement: " For a letter of ..... words, set the marginal stops of the typewriter at ..... and ....., and begin to write on the.....th line." It is unfortunate, too, that some teachers' practical test of "balance" is to fold a finished letter and, holding it to the light, look for exact symmetry in left and right margins and in top and bottom margins.

Strangely enough, a pleasing balance is not the result of exactness. Psychologically, the visual middle is above the true middle of a page. Consider the letter-mass as a mounted etching with plenty of white margin on both sides and extra margin at the bottom. But it is not to look like an island—removed from the letterhead. With printed letterhead, a letter may be regarded as a picture suspended from the molding (letterhead) by imaginary silken cords. When so considered and placed it will be unified with its setting. No need to worry, then, about too deep a margin at the bottom of a short letter so long as side margins provide a pleasing white mat.

The concept of wide side margins is not developed among some typists, particularly those who have extensively practiced speed drills standardized on seven-inch lines. Their judgment should be improved. Sometimes this is best accomplished by getting away from the machine and experimenting with surfaces cut from newspapers, to be arranged on standard-size paper ($8\frac{1}{2}''$ by $11''$). For example, with a printed area of about 25 square inches, the traditional one-inch (or $1\frac{1}{2}$ inch) margins at left and right will give a surface mass $6\frac{1}{2}$ inches wide and only 4 inches deep (in the case of $1\frac{1}{2}$ inch margins, the result is an approximate 5-inch square mounted on a rectangle). Widening the margins to 2 inches gives a pleasing sur-

face-mass which conforms to the proportions of the paper.

The proper position of the date line puzzles some typists. Various manuals prescribe the number of lines to be spaced between the date and the inside address. Actually the date line may be regarded either as a part of the heading or as an integral part of the letter. In the former case it may be placed close to the letterhead print, particularly when the letterhead is of the inverted pyramid type (centered). If the letterhead is irregular or complicated, the date line may be dropped to mark the top imaginary boundary of the written area.

Similarly, the close and signature are to be regarded as demarcating the lower right corner of the written area. Identifying initials (dictator's and stenographer's) and notation of enclosures, contrary to textbook models, should *not* be dropped in the lower left corner below alignment with the last item at the right. Reason: The eye unconsciously follows the imaginary border line set by these uneven corners.

Whether the inside address and components of the complimentary close, signature, and typed name or title are indented or in blocked form is a matter of preference. The block form seems to find increasing favor. It is compact in appearance and it is executed with fewer motions. Consistency in form in these two parts is desirable, but not universally observed. If block form is the motif in the address, one would wish that motif to be repeated in the closing part. If indention is the motif in the address, then indention, for consistency, should be observed in the closing part.

Instructions in some textbooks specify that the beginning of the complimentray close should "balance" with the beginning of the date line as though marked by a plumb line. The reason for this procedure is not clear, except that it is mechanically easy to follow. Balance, however, is based on diagonals, not on vertical lines off-center. Again referring to the imaginary rectangular border, the more artistic arrangement is achieved by beginning the unit at whatever position will place its longest line flush with the right margin. On this basis, too, the strictly block form, wherein all items are aligned flush with the left margin, is less desirable than occult balance achieved through a unit at the lower right.

Indention of paragraphs is another matter of personal preference, although tradition has almost fixed five spaces and ten spaces as standard. Actually eight spaces has been found more pleasing to some experimenters, especially with elite type (having 12 letter spaces to an inch).

Short paragraphs are desirable in business letters. They are easier to read than are longer, literary-type paragraphs. They are more definitive of the separate phases. They are helpful to the recipient of the letter if he wishes to check off each phase for attention or answer.

The appearance of a letter is of course conditioned by such other factors as quality, color, kind, and

size of stationery; by size of type and quality and freshness of typewriter ribbon; and by workmanship of the typist.

Fortunate is the stenographer or writer who has at hand appropriate stationery for the second page of a long letter. Good usage forbids continuing on formal letterhead, yet suprisingly few offices are supplied with plain paper that matches the letterhead in kind, quality, watermark, and exact color. Some firms have specially designed stationery for this purpose, usually carying a subordinated form of heading that harmonizes with the official letterhead.

For indentificaton in sequence it is customary to repeat at least the name of the addressee on the second page. Whether the name, address, date, and page number should be attenuated in one line at the top, as in page headings of books, is again a matter of preference. If minimal space is left between that line and the body, there is a possibility that the reader's attention may be distracted from the message to the structure. A half-inch of blank space is not too great a separation here.

In carrying over the message to a second page, once again traditional precept may be violated for advantage to the reader. Most typists approve of ending a page with the close of a paragraph and beginning the next page with a new paragraph. Yet sequence of thought and statement is sustained better when the page-break comes within a paragraph. This principle is particularly applicable to manuscripts. Continuity of content is thus made obvious to the reader, and the structural aid in sequence precludes inadvertent disarrangement of pages due to similarity in appearance.

Where should the writing begin on the second page? Why not align it with that imaginary border on the first page; namely, the address or the date line? Never should a fractional second-page be centered. One criterion might be to follow the style of a book of short poems, wherein the poems are suspended (depressed) equidistant from the top, regardless of their varied lengths.

PERSONAL CORRESPONDENCE

Typewriting a personal letter is a courtesy to the reader, not a breach of manners. In an age when the typewriter is a language tool from kindergarten up, why should there be objection to its use in personal communication? A letter from one who employs his personal skill to facilitate the recipient's reading ought to be graciously received.

Tradition still exercises restraint in the conventions of correspondence, though fashion sanctions daring innovations in dress. A woman may wear slacks at a smart dinner party, lounging pajamas to receive visitors, a woolen sweater as part of formal dancing costume, or hot-pink ensemble, but in her social correspondence only conservative stationery and conservative color of ink (black or blue-black) is considered correct. Many of us who were writing shorthand when the

Great War cut off imported dyes and inks found greatest visibilty in domestic violet ink. Since that time all ink-dyes have been tremendously improved, but violet and green ink still rank high in readability. Why not accept these colors for social letter writing? Why not address the envelope with ink that matches the color of the stamp we must affix? Not in good taste—says the etiquette book.

And this is what the etiquette book dictates for sequence of pages in writing on four-page folded stationery: Write page 1, then write page 4, then unfold the notepaper and, turning it about, write on the inside pages as though they were one page, at a right angle to the direction of the writing on pages 1 and 4. A handbook of English, however, prescribes straightforward writing on such paper in the sequence of 1, 2, 3, 4, with no turnabouts and no detours. Which is the more considerate of readers accustomed to reading programs, booklets, and sheet music? Shall manners triumph over common sense?

Like formal correspondence, personal letters should be complete, with date and names and addresses. "Thursday" or "Monday Nite" is not sufficient. The name and address of the person to receive the letter should be clearly written somewhere on the paper—unless the correspondents wish to remain anonymous to the Dead Letter Office. Envelopes do get damaged, letters are sometimes erroneously addressed, raindrops obliterate washable-ink directions, and unforeseen contingencies route many letters to Post Office headquarters as undeliverable.

A salutation of endearment is appropriate in a personal letter. But why, pray, does the practice prevail of pointing it with a semicolon? A colon properly follows the salutation; a comma is acceptable; a dash is not objectionable and it is easy to mark in longhand. Combination of comma and dash or of any two marks of punctuation is archaic. A semicolon is anomalous.

STYLE IN FORM

Current usage sanctions the omission of punctuation at the ends of lines in the heading and inside address. This style is called open punctuation. That which puts a period at the end of the date line and at the end of the address, with commas for preceding lines, is called close or closed punctuation. Neither style exclusively accompanies either the indented or the blocked form of arrangement, though the open style, being less traditional, seems the more suitable for block form. The fixed official style in arrangement and punctuation for government correspondence is indented form with punctuation.

It is singular that the open punctuation mode has not extended to the salutation and the complimentary close. If these are to be retained as essential parts of a letter, is there a sound reason for the customary comma to be preserved in the closing item? Good typographical style in printing dispenses with end-punctuation in display items; *i. e.*, in lines

which are distinguished by type or position, as in captions and headlines, items in a program, and names and addresses on cards. By this criterion, there seems little justification for the comma in the complimentary close or for the colon in the saluation. One exception might be conceded—possibly the colon supplies strength in appearance to a weak-looking, short saluation ("Dear Sir"). In longer salutations ("Dear Professor Schneider") it detracts.

As a reading aid to the recipient to whom the writer is unknown, a thoughtful dictator has his name typed below his signature. This courtesy could and should be extended to include the title "Mr." with given names like Marion, Ruby, Kay, Evelyn, and Claire, which do not denote the sex. Parentheses need not enclose the "Mr.," since the purpose of typewriting the name is to show the correct form of address for reply. There is division of opinion as to what title is correct for women when the name is not labeled "Miss" or "Mrs." Earlier custom required that all women be addressed as "Mrs." unless the title "Miss" was shown. Present trends assume that a business woman is Miss unless she designates her married name or inserts the title "Mrs." in parentheses before her signature. The most sensible method, in view of the function of a typewritten addition to the signature, would be to sign "Mary Miller" and typewrite "Miss Mary Miller" without parentheses.

It is proposed here that business letters which do not carry a printed heading could be improved by placing the address directly below the signature and typewritten name. In letters of inquiry or requests for announcements and catalogues, the grouping of name and address together is helpful to the mailing clerk. He need not then look to the bottom of the page for the name and to the top of the page for the accompanying address.

ADDRESSING THE ENVELOPE

Should the form of the superscription on the envelope match the form observed in the inside address? Most authorities say, "Yes." If single-spaced block-form style with open punctuation is used in the letter, then single-spaced block-form style with open punctuation is recommended for the envelope. Moreover, in the routine addressing of large quantities of envelopes, considerable economy is effected in time and motion-saving when the typist omits terminal punctuation marks and aligns the items instead of indenting them. On the other hand, the United States Post Office prescribes a definite arrangement—street address, city, and state to be successively indented to the right, on separate lines, with a comma after the name and at the end of each line except the last one (state), which is pointed with a period.

Inasmuch as the government undertakes long-distance transportation of our letters for the consideration of only three cents, is it not good judgment and courtesy on our part to expedite that service by conforming to its recommendations?

If the postal clerks can more readily perceive particular items when they are set off by indention, then let us direct the envelope to facilitate despatch. The envelope is to be regarded as a carrier of the message rather than as a part of the total design of the letter. In a mild way a letter is analogous to a Christmas package. The sender may decorate the inside package with tinsel, but mailing regulations demand stout cord, no tinsel, for its carrying wrapper. As for matching, even professional decorators give precedence to function. They may deliberately cover one wall of a room with paper that neither matches in color nor follows the design of the rest of the unit. Similarly, utilitarian function is the best criterion for determining the most suitable form of envelope address, regardless of the dominant design in the letter itself.

Double spacing in typewritten addresses is to be preferred to single spacing, for readibility. Even four-line addresses may be double spaced advantageously, textbook models to the contrary notwithstanding!

Abbreviations in addresses, as in other written matter, are still held to be slovenly. Only in cases where the full form would result in awkward or unbalanced appearance are they appropriate. Artistic balance is likewise the determiner in the placement of a title such as "President" or "Secretary." If the individual's name is short, the title may follow his name. If the name is rather long, and the name of the organization is short, the title may go on the line with the organization. In many instances, there seems no important reason for encumbering the superscription with the title. It is included within the letter as a record of the authority or capacity of the addressee.

Were it not for frequent observations of the inappropriate use by adults of % and # in addresses, no mention should be made of these points. It is easy to see how longhand writing of "Care of" can have evolved through the abbreviation "C/of" into a resemblance of the percentage sign. Nevertheless, the practice is inexcusable. "Care of" should be written in full except, as in cases mentioned above, where the appearance of the line would be improved by abbreviating. In such instances "C/o," but not "%," is understandable. The symbol for number should never be used. "Box 63" or "Rural Route 5" is sufficient.

The word "Street" or "Avenue" or "Boulevard" or similar designation is an essential part of the address and should not be omitted. Its omission may delay delivery. In some cities, notably New York and San Francisco, certain streets and avenues carry the same name. The necessary supplementation by postal clerks is costly to the government and is not compensated by the three-cent fee.

STYLE IN CONTENT

Few questions of style can be answered unequivocally. Readability, consistency, and practicality are perhaps the best specific guides. Take the matter of numbers—when to spell out, when to use figures.

Obviously the newspaper rule of using words for all numbers under ten and numerals for those having two or more figures cannot be followed implicitly. To write "nine men and 11 women" is inconsistent. Sums of money may correctly be written in full, but they are often more effectively presented as numerals. When both dollars and cents are involved, their written form may occupy a full line of writing, taxing the eye span and mental perception to a greater degree than do concise figures. For quick perception and pleasing appearance the form $25 is to be preferred to $25.00, though the latter is equally correct, and should be used for consistency in a series such as $22.50, $25.00, $27.50. Even the series may be correctly spelled out when formality and precision are a paramount.

The duplication in number-words followed by figures within parentheses gives an emphasis that is offensive to some readers. Such form is being restricted to contracts and legal papers. When both are used, the proper repetitive form, according to some manuals, is *Five Hundred* (500) *Dollars* and *six* (6) *per cent.* In the opinion of the writer, the parentheses should include the symbol and should be placed not within the unit, but after it, thus: *Five Hundred Dollars* ($500.00) and *six per cent* (6%).

There are at least four authorized forms of designating percentage besides the rarely used decimal form. Some writers hold to the abbreviation "per cent." with a period. Others use the term "per cent" as a phrase, not an abbreviation. Some compound the term as "percent," with or without the period. One authority is emphatic in specifying that the symbol must accompany a numeral, and that the term must not be written out unless the number is written out in word form. This form meets the criteria of readability, consistency, and practicality. Many object to it because of its unpleasing appearance.

We have been taught that the word "number" is not to be used with figures. The abbreviation "No." is the standard form to precede numerals. Yet the practice of insurance companies is to write "policy number 31506." The use of the symbol "#" merits little favor except in catalogue numbers and in tabulated matter.

The use of the comma in numbers finds varied practice. Statisticians often omit it in four-figure numbers (2834), but insert it in larger numbers (28,345). *The New York Times* employs the comma in four-figure street addresses (2,558 Broadway) but not in dates.

Time of day may be expressed as nine o'clock, 9 o'clock, or 9:00 A. M. The last form seems least desirable typographically. The zeros and "A. M." are not needed for clearness. To denote antemeridian, the typist may use capitals and periods with or without space between, or small letters and periods with or without the space, or even capitals and no periods with or without space, after the style of WPA (with or without spacing), or small letters after the

style of Dewey. There is justification for any of these forms.

Most of the manuals follow printers' style in setting up titles of books. The typist uses underscoring as the equivalent of italics in print. Quotation marks are not the best usage for book titles, and should be reserved for titles of articles, pictures, and poems. Typographically they are inartistic and consume too much space. The rarely used single quotation marks have been effectively employed by some stylists instead of the traditional double marks. Underscoring is not especially pleasing to the eye, and it requires double typing effort. Many publishers make use of all-capitals for book titles in typewritten letters which they have carefully prepared for circularization.

Deviation from textbook instructions for typewriting the dash is observed in current practice. No longer obsolete is the single hyphen preceded and followed by a space, if we may judge from columnists' style and from letters prepared by up-to-date advertisers. Fragmentary sentences, too, still not countenanced by teachers, are effectively employed by experts in forceful presentation of a message.

American typography, contrary to English style, has long held that the period and comma, being low punctuation, should be placed within quotation marks, whether they logically belong there or not. One writer vehemently describes as an "idiocy" the arrangement ' ". instead of .' " for the end of a sentence containing a quotation within a quotation. Although a few magazines (usually those circulated in foreign countries as well as in America) have not followed the inside style, the practice prevails in most publications and in typewriting instruction.

It is interesting that an office so bound by tradition as the United States Government Printing Office should twice have changed its style in this matter. Years ago that office observed logical placement of these points of punctuation. Next it regulated that the period and comma should always be placed inside the closing quotation mark. A few years ago it changed to logical placement. Is its present practice reversion to the old established form or a concession to current trend?

No rule is absolute. No style can be permanent. Once we had the inviolable rule that *q* is always followed by *u*. Now we find *u*-less *q*'s in trade names and in "Iraq." When the letter writer encounters innovations, irregularities, and new problems in diction, punctuation, arrangement, or style he must substitute reasons for rules. He will do well to make his decisions on the basis of readability, pragmatism, logic and consistency.

The Metaphysical Foundations of Science

R. G. Smith

In Mark Twain's story of Huckleberry Finn and his friend Jim, the fugitive slave, we find them floating down the Mississippi on a raft, drifting at night and hiding by day in the willows and cottonwoods along the river banks. To quote "Huck":

> It's lovely to live on a raft. We had the sky up there, all speckled with stars, and we used to lay on our backs and look up at them, and discuss about whether they was made or only just happened. I judged it would have took too long to make so many. Jim said the moon could 'a' *laid* them; well that looked kind of reasonable, so I didn't say nothing against it, because I've seen a frog lay most as many, so of course it could be done. We used to watch the stars that fell, too, and see them streak down. Jim allowed they'd got spoiled and was hove out of the nest.

As another example of man's efforts to explain away the mysteries of the universe, we turn to Hindu mythology which pictures the earth supported by a huge elephant standing on the back of a swimming tortoise. This explanation of how the earth is supported seems crude and childish to us, though in ancient times it was most natural to a people who recognized the elephant as the strongest beast of burden. However these and similar theories present difficulties more basic than the unnatural elements assumed. Even though we were to assume that the earth is supported by hypothetical beasts, and were to grant such maternalistic powers to the moon as imagined by Jim, there would yet remain two questions. Whence came the moon, and what supports the water, that supports the tortoise, that supports the elephant, that supports the earth?

Modern science runs into the same difficulties. Regarding the origin of this mysterious universe, science must agree with Huckleberry Finn and allow that it just happened. Just as the water supporting the tortoise must remain unsupported else it would not be the most basic support, so too the basic materials and forces of natural science remain abstract, mysterious, and miraculous.

Prior to the sixteenth century, it was more or less taken for granted that the earth was in the center of the astronomical universe encircled by the sun, moon, and planets. Early in that century Copernicus was led to question the accepted order of things on discovering in the writings of Cicero and Plutarch that a few ancient philosophers had thought that the earth moved. Although this idea of the mobility of the earth seemed absurd, Copernicus discovered after long observation that the geometry of the heavens would be greatly simplified if it were assumed that the earth and planets revolve

about the sun. Note that no attempt was made to explain how the earth could wander through space without falling or getting lost. No hypothetical seal with marvelous juggling powers was assumed to replace the elephant of Hindu mythology. Hence it is not surprising to learn that the Copernican theory was not accepted for another sixty or seventy years except by a few mathematicians and intellectual radicals.

General acceptance of the Copernican theory was finally won, largely due to the efforts of Galileo in Italy and Kepler in Germany. By showing that two bodies of unequal weight fall with the same acceleration, contrary to the accepted law that the heavier would fall with a greater acceleration, Galileo was able to demonstrate that the existing theories and authorities were open to question and re-examination. Then too, the telescope had just been invented at the turn of the century, and Galileo with his improved glass was able to observe the moons of Jupiter. Here for the first time one could actually see another world with its satellites, similar to our earth with its one satellite, the moon. If Jupiter with its moons could move about the sun, why could not the earth with its moon do likewise? From astronomical observations made possible by the newly invented telescope, Kepler was able to state definite mathematical laws regarding the path, angular velocity, and period of motion of a planet about the sun.

As noted before, the Copernican theory, made plausible by Galileo and mathematized by Kepler, merely states the laws of motion of the planets about the sun without attempting to explain how or why they follow these laws. Near the close of the seventeenth century DesCartes in France, Leibniz in Germany, and Newton in England were making serious attempts at an explanation of planetary motion. Newton in his *Mathematical Principles of Natural Philosophy and System of the World,* better known as Newton's *Principia,* proposed a system of physics which won fame and admiration. Laplace in paying tribute to Newton remarked that he was not only the greatest genius, but also the most fortunate, inasmuch as there is but one universe to interpret. Many contemporary philosophers felt that Newton had carried natural philosophy to the highest point to which it is capable of being carried by man. However, the recent works of Einstein, Weyl, Eddington, and others have shown different interpretations of the universe and new heights of natural philosophy.

Before returning to Newton and his theory let us consider a simple experiment that has been performed time and again by most children. Take a rock or ball, tie it to the end of an elastic string, and swing it around and around in a horizontal plane describing a circular arc. Note how the circular path is so unnatural that the ball tends to draw away and in so doing sets up a pull on the string. Note that this pull increases as the angular rate of motion is increased and that the tension in the

string increases to balance the increased pull.

Newton saw in this simple experiment a solution to his problem, if he could only find some hypothetical string tying the earth to the sun and the moon to the earth. He might have gone the Hindu Mythology one better and imagined a mighty snake with the earth between its jaws and the sun wrapped securely in its tail, but he didn't. Perhaps the sun would be too hot. Instead, he assumed that the same strange force called gravity, which pulls ripe fruit down from the tree, reaches far out into space, tying each heavenly body to every other heavenly body in a mesh of powerful tenacles. Having demonstrated mathematically that an inverse square gravitational law of attraction together with certain laws of inertia would explain Kepler's laws of planetary motion, Newton's theory was well on the road to general acceptance except for the fact that this thing called gravity was just too unreal—it couldn't be seen, it couldn't be felt.

The very thing assumed by Newton to explain the mysteries of planetary motion becomes the greatest mystery of all. How can there be action at a distance? One who has been on the beach and witnessed the moon and sun lift the ocean to its highest high tide of the season can just begin to comprehend the tremendous forces involved, if Newton's theory is to be accepted.

From Roger Cote's preface to the second edition of Newton's *Principia* we find the following defense given in answer to the criticism of DesCartes, Leibniz, and others.

> But shall gravity be therefore called an occult cause, and thrown out of philosophy, because the cause of gravity is occult and not yet discovered? Those who affirm this, should be careful not to fall into an absurdity that may overturn the foundations of all philosophy. For causes usually proceed in a continued chain from those that are more compounded to those that are more simple; when we are arrived at the most simple cause we can go no farther. Therefore no mechanical account or explanation of the most simple cause is to be expected or given; for if it could be given, the cause were not the most simple. These most simple causes will you then call occult, and reject them? Then you must reject those that immediately depend upon them, and those which depend upon these last, till philosophy is quite clear and disencumbered of all causes.

In the *Principia* gravity is presented as an axiomatic element, or beginning point, in Newton's theory of natural philosophy. However, Newton, found it difficult to concieve of inanimate matter having the power to operate upon and affect other matter without mutual contact of some form, so he attempted without marked success to explain gravity in terms of an all-pervading ether.

According to the modern theory of relativity, gravitation is a property of the space-time continuum, rather than a property of matter. Gravitation becomes an aspect of an abstract geometry, hidden from the view of all except a few expert mathematicians.

Although we have followed but one or two phases of science, many

similar stories might be told. The scientist studies nature, and from this study proposes certain laws to explain the processes of nature, but the basic causes of these processes are forever elusive. The physicist who is supposed to specialize in the study of matter, force, and energy has for centuries searched after the most elementary particles of matter only to find them to be anything but hard, lifeless material pellets as imagined by ancient philosophers. Rather, they seem to be full of electrical life, with the properties of light waves, and identical with that intangible something called energy. As a result the philosophy of the physicist is anything but material, for to him matter and energy are one and the same. The most basic things in this strange universe of ours are of necessity undefinable, and their existence is often in doubt as they seem ever to evade our most diligent search.

Harris Elliott Kirk, in his John Calvin McNair Lecture at the University of North Carolina in 1932, pointed out that it appears as though nature were saying to us:

> Do not take me for granted. I am not at all what I seem. Do not imagine you have reached the heart of my mystery when you get down to the electron. There is something beyond the electron, smaller still. Remember, the more thoroughly you probe into my small-scale realm, the more puzzled you become at my behaviour. Your notions of laws and rules, of continuities and discontinuities, of jumps and revolutions, of radiations and waves—are not these creatures of your mind? You cannot understand me when you reduce me to a dull catalogue of statistical and common things, or state me in an unintelligible mathematical symbol on the blackboard.
>
> I have more important things to say to you. For instance, look at yourself. You are a part of me. In fact, did you but know it, you are my interpreter. If there be anything real, anything capable of giving an aspect of rationality to this fantastic dance of circumstance which you call the material world, it is yourself. There in your own mind, in the rich content of your consciousness, is a golden string: wind it into a ball, and it will lead you into the heaven of my mystery, and enable you to understand what it all means.

Why Not A Stenographer?

MARY LEE HAGEMANN

The answer to the question "Why not a stenographer?" would, in all probability, depend a great deal upon the person answering it. Perhaps, a few years ago, there were those academically minded persons who would have advised students who were naturally bright or ambitious not to elect the commercial course and, at the same time, may have implied that only those having less native ability select such a course. Fortunately, many of these people now seem to be willing to pay the commercial course a little more respect. Moreover, it is highly probable that many students who elected the commercial course with the idea of its being an especially easy one may have changed their minds.

On the other hand, to narrow the case down to stenography alone, one may choose *not* to become a stenographer because of the realization that in order to become a good stenographer one must possess an assemblage of correlated skills, technical knowledge, and special abilities (a combination not altogether easy to achieve), and that this assemblage of "knowledge of" items must be coupled with the ability to use them.

A great deal has been said about the "boners" of stenographers. No doubt, we have all heard some of the criticisms made of "dumb" stenographers. Certainly, we cannot lose sight of the fact that one of the most necessary qualifications of an efficient stenographer is a good store of "common sense," which is by no means handed to an individual simply because he has completed a certain number of courses in school, but which is a part of the make-up of that person.

Perhaps much of the criticism aimed at stenographers is based on their inefficiency as secretaries. In 1923, Charters and Whitley[1] carried on an investigation to determine the duties performed by the secretaries to business men and administrators and to determine the traits and qualities conspicuously present in successful secretaries and conspicuously absent in unsuccessful secretaries.

Duties to the number of 871 and a list of 47 traits were reported by 125 secretaries.

Certainly, in the light of this study, we can see something of the tremendous number of duties and tasks for which a secretary is held responsible. Chief among these duties are the ones which are strictly stenographic. These alone present enough problems. It will be my purpose to champion the cause of

[1]Charters, W. W., and Whitley, Isadore B., *Summary of Report on Analysis of Secretarial Duties and Traits,* New York: The National Junior Personnel Service, Inc., 1924.

one who is a stenographer with no secretarial duties. Have those individuals so willing to offer criticism ever considered all that is involved in "the ability to take dictation and transcribe mailable letters"?

The process of transcription not only means recognizing the shorthand symbols and turning them into typewritten words; but at the same time, spelling the words correctly, anticipating punctuation, dividing words properly at the end of a line, and giving attention to the form and placement of the letter on the page. In other words, what the stenographer must know is how to follow the hieroglyphics of her shorthand notes, run them through the typewriter, and obtain a result that will be a credit to herself, the dictator, and the company—a product free from errors in English, in spelling, in punctuation, and in vocabulary mix-ups. Transcription alone is a complex process blended of several special skills and knowledges:

1. Fluent reading of shorthand notes.
2. Ability to maintain a steady writing pace that assures firm and attractive type.
3. Exact placement of punctuation.
4. Ability to edit for grammatical errors or poor usage on the part of the dictator.
5. Exact comprehension of the ideas involved.
6. Exact English construction.
7. Knowledge of spelling and syllabication.

Some of the above-mentioned skills need hardly be commented upon, but volumes have been written on English construction alone, and a great deal might be said in connection with several of the other skills.

When we consider all the difficulties encountered in struggling through the maze of English grammar and spelling, we find the odds tremendous. First of all, there is the task imposed by the very richness and immensity of the English vocabulary—200,000 different words in the latest New Oxford Dictionary. Most business men, of course, use only a small percentage of these words, but not all business men use the same percentage, and even in these small percentages there lie many pitfalls. A stenographer must face the *effects* and *affects* of life in a business office, consider *council* and *counsel*, give and take *advice* or *advise*, etc., for we still have our *accept* and *except, access* and *excess, principal* and *principle, accessory* and *accessary, adopt, adapt,* and *adept,* and any number of additional words equally confusing.

A stenographer must have a broad enough general vocabulary so that she will not make such errors as reporting that a speech *sabered* highly of patriotism when *savored* was the word intended; or to order two carloads of *dynamite* when *dolomite* was the material desired; or to report that a group was to meet *biannually* instead of *biennially*. Neither should a stenographer make the mistake of addressing a letter to the "Commissioner of Eternal Revenue, Washington, D. C." even though the inevitability of taxes may make the

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name quite appropriate. It is clear that, since a stenographer cannot always believe her ears, she must be able to supply the word intended even though there may be several words having nearly the same sound.

Added to the troubles of grammar and vocabulary is that of spelling. Our extremely non-phonetic language makes is necessary to learn the spelling of each word as a thing apart from all others. The typewriter makes it impossible to cover up ignorance in spelling. It is not possible to scrawl a few waves and sprinkle several dots over them and call the word "minimum," or to write two letters, either of which might be taken as "*i*" or an "*e*," with a dot between them, if one does not know how to spell receive."

As another difficulty we might mention the technical words in the terminology of occupations. There is the electrician with the terms *microfarad, electrostatic, ohm, watt,* and *ammeter*; the architect speaking of *caissons* and *calks;* the doctor telling of *hyperthyroidism, metabolism, neurasthenia, tonsillectomy;* the aeronautical expert with the terms *amphibian, smog, aileron, and nacelle.*

Not only are there the technical terms of the various occupations and professions to contend with, but also sometimes even more confusing, the words which in themselves seem very innocent but which carry a technical meaning. As examples of these we have *chuck, dolly,* and *flashing* as used by a carpenter; *bear, corner, curb,* and *long* as they are used on Wall Street; and *housing* and *worm* spoken of by the mechanic—all of which have a technical meaning entirely different from their usual meaning.

There are other problems, which no amount of classroom preparation could eliminate, such as becoming accustomed to the peculiarities and eccentricities of the dictator. One might have to take dictation from the employer who mutters instead of talking, who dictates with a cigar in his mouth, or whose words are usually minus a few syllables such as *supior, adquate, famlar, recnition,* etc. Neither is it easy at all times to understand those individuals who have a foreign accent or an accent peculiar to a different section of our own country.

Then there is the dictator who may have his own individual way of expressing his ideas. For instance, one employer in dictating a letter to a close friend and business associate said, "I have succeeded in getting nearly all the bugs out of the screen." The idea he intended to convey was that he had practically perfected a certain piece of laboratory equipment upon which he had been working. Quite naturally, however, the stenographer wondered whether to believe her ears.

Because there are so many confusing sounds, a stenographer cannot always trust her ears, and for that reason exact comprehension of the ideas involved is necessary. Many of the mistakes made in transcription work are directly due to the failure to comprehend the mean-

ing of the material dictated. Such was the case when a stenographer transcribed a letter containing the sentence, "We fail to understand the nudist count mentioned in your recent letter." The sentence should have been, "We fail to understand the new discount mentioned in your recent letter." Another example of this type of mistake appeared in an advertisement which read "Dunk and Fife Table and Chairs for Sale —Cheap."

You may say that the problem of using correct English is that of the dictator and not that of the stenographer because the language of the dictated material is not the stenographer's but the dictator's. Quite true, but there are dictators and dictators! Just because a man or woman has executive ability does not mean that his or her English is above reproach. Some stenographers must not take any liberties whatso-ever with their transcription work. Court testimony and similar matter must be transcribed verbatim, but in typing business letters the stenographer who has the skill to make necessary or desirable alterations in English will soon be known as a superior stenographer. Of course one occasionally encounters the dictator who will allow no alterations in letters. In such cases the stenographer must accede to his wishes. But most dictators will be very grateful for being saved the embarrassment that they might feel should a recipient of a letter gloat over some uncorrected error. Elgene J. Knisley, official shorthand reporter for the New York Supreme Court, tells something of his activities in the following:

> The product of the shorthand reporter's efforts should be the finished article; an article not only "reported" accurately, but an article presented properly for publication—edited, planed off and smoothly finished. Of course, in dealing with court testimony, however, "editing" is not done save to correct an ungrammatical expression by the court or by the lawyer. In the term "edited," I do not mean to suggest an alibi for an inaccurate report. By "editing" I mean, if you like, making the speaker say, or presenting the speaker as having said, what he intended to say, in the grammatically correct manner in which he should have said it. For example, at the close of the discussion of a very important bill, in one of the foremost committees of the United States Senate, the shorthand reporter said to the chairman of the committee, 'Senator, you have me bested. I don't know the parliamentary equivalent of "nuts."
>
> "I don't get what you mean," said the senator, with a frown and an air of impatience.
>
> "Why," said the shorthand reporter, "you said you didn't want your committee to look like a bunch of nuts when this bill got on the floor, and I don't know the parliamentary equivalent of "nuts."
>
> After a moment's reflection, with a profoundly serious air, the senator said, "Well, perhaps you had better make it "yaps." Which the shorthand reporter did as follows: "I do not want it to appear, when this bill gets upon the floor, that this committee has not given it proper consideration." Thus some verbatim reports are made! And the speakers congratulate themselves on their ability to express themselves well.[1]

Although some or all of the above mentioned problems may present

[1]Knisley, Elgene J., "To Get Speed in Shorthand," *The Gregg Writer,* December, 1939.

themselves in varying degrees of complexity, the individual with the stick-to-it-iveness and the necessary native ability should be able to cope with them. Then let us never lose sight of the fact that there is plenty of room "at the top" in the field of stenography and reporting. Not only are there many responsible stenographic positions in business offices, but many other interesting fields are open to the efficient stenographer. Shorthand is by no means confined to the business office. Many are the opportunities of the shorthand reporter. Lawrence David Brennan gives an interesting account of the work of Miss Olive Richard, secretary of the famous psychologist-author and originator of the lie-detector test, Dr. William Moulton Marston:[1]

> "You might find Miss Richard writing her important boss' dictation in an airplane, or in an automobile. Court proceedings, conferences of scientists, interviews with governors, psychological treatment of millionaires and their families, testing prisoners in a penitentiary, all form the basis of Miss Richard's routine day."

The shorthand reporter is to the stenographer what the counselor-at-law is to the attorney; what the surgeon is to the physician; and what the certified public accountant is to the bookkeeper. As these men or women are leaders in their professions, so is the shorthand reporter a leader in his or her profession.

Naturally, we cannot all reach the "heights," but there are plenty of opportunities in the "middle ground." Here, too, one will come in contact with many interesting things, and there should be the added satisfaction one feels at the completion of a task well done. After all, our question may be answered by asking the same question with a different inflection. *If* one has the necessary native ability, the will to master the intricacies of the English language, the ability to make necessary adjustments, and the will to work, he may say "I am going to be a stenographer. Why *not?*"

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[1]Brennan, Lawrence David, "An Unbeatable Combination," *The Gregg Writer*, December, 1939.

Terminal Courses in Junior College Mathematics

R. W. HART

When one considers terminal courses in junior college, he has in mind the student who does not intend to continue his formal schooling beyond the usual sophomore college year. This means that these terminal courses are not for the future advanced student in senior college or graduate work, or the research worker, or the highly trained specialist, but they are for that large group of citizens whose stations in life are somewhere between that of the unskilled laborer and the professional man or woman. This group has too often been neglected in our educational system. In building curricula both in high school and in junior college most of the emphasis has been placed upon the needs of the student who is studying for the baccalaureate degree.

The popularity of the junior college during the past two decades and the tendency of many four-year colleges to make a distinct division between junior and senior college have paved the way for terminal courses in junior college. Some progress has already been made in such fields as commerce, home economics, and certain trade courses; other departments could offer work which would be just as attractive and practical. Many of these courses would not be acceptable for entrance to senior college, but they would be of more benefit to the student who drops out of college at the end of the second year than courses that are intended to be prerequisites for advanced study.

In constructing terminal courses in mathematics, the future vocations of the individuals should be the governing factor. These students will hold such positions as skilled tradesmen, shop foremen, draftsmen, mine foremen, insurance salesmen, business men, etc. They will very seldom, if ever, be called upon to solve a problem in calculus or analytical geometry, nor will they use much of the college algebra and trigonometry that is taught in the usual college courses in mathematics. However, they need some mathematics, and they will be handicapped if they do not learn it somewhere. The purpose of this article is to point out some of the topics in mathematics that should be a part of the equipment of these students who will be interested in terminal courses in junior college.

ARITHMETIC

Of course all college students have had at least eight years of arithmetic, but they have not acquired the skill and self-confidence to perform the fundamental operations with numbers, which are desirable.

Anyone who intends to use arithmetic in his vocation should learn to set up his problems completely before beginning to add, subtract, multiply, or divide, and he should know how to simplify his work by such methods as cancellation and factoring.

As an illustration, take the problem that appears periodically on college campuses: If the circumference of the earth at the equator is increased by three feet, how much is the radius increased? Most college students would solve this problem by multiplying 4000 by 5280 to obtain the earth's radius in feet; then they would multiply this result by two times pi to get the earth's circumference. Adding three would give the new circumference; the radius would be found by dividing this result by two times pi after which the required answer would be obtained by subtracting the earth's radius in feet. If this same problem is set up completely and simplified by canceling common factors and combining terms, it is discovered that the only computation necessary to get the final result is merely to divide three by two times pi. This is a typical example of many problems where much laborious computation can be avoided by applying a knowledge of the principles of arithmetic. Acquiring this skill is difficult for the pupil in the elementary grades, but after a person has had some algebra, it should follow easily. In the present junior college curriculum in mathematics, there is no place for emphasizing the development of proficiency in the handling of numbers. This could be taken care of in a terminal course.

Arithmetic is a powerful tool for the practical man when it is understood. It is surprising to see many skilled workers who, by using only methods of arithmetic, solve problems which we feel belong in the field of algebra. With the old rule of three and a mastery of percentage and interest, the eighth grade graduate a half century ago was able to meet the competition of his day and earn a place for himself in the business or professional world. Today with the increasing number of high school and college graduates, he needs more mathematics than is found in arithmetic to enable him to progress in this present scientific and industrial age; hence, our terminal courses in junior college mathematics should include other subjects than arithmetic.

ALGEBRA

The algebra used by the junior college graduate consists chiefly in the use of formulas, solving simple equations derived by substitution in formulas, and in understanding such algebraic processes as will be found in the literature pertaining to his vocation. Thus in a terminal course in algebra, many topics could be omitted that are now found in the usual courses in college mathematics. A study of a college algebra text will reveal that most of the material offered is presented because it is needed in higher courses in mathematics intended for the four year college student. This is true of most of the factoring, the use of com-

plicated algebraic expressions involving unusual fractions, radicals and exponents, the theory of equations, determinants, simultaneous quadratics, and other topics easily recognized by the one who is familiar with the needs of that class of workers for whom terminal courses in junior college are planned.

Formulas play such a large role in the practical man's mathematics that he would be justified in spending some time in learning to use them. A formula is an algebraic equation and to use it intelligently one must understand the elementary laws of algebra which are used in the solution of equations. This involves the laws of multiplication, division, addition, subtraction, removal of parentheses, clearing of fractions, and any other principles that are used to solve simple equations. Of course, many people use formulas without having the knowledge of algebra, but their work is made more difficult because of this handicap. A formula may be an expressed relation of several quantities, and if the values of all except one are known, that can be found by the laws of algebra. Without algebra it is necessary to have several different equations, each of which is solved for a particular quantity. Training of this kind in algebra is also valuable as an aid to the teaching of the laws of arithmetic. The two could be taught simultaneously.

Literature on elementary technical subjects is difficult to understand without some training in algebra. This training should consist not only of work with the elementary processes of reckoning, but should also include some use of abstract thinking. A whole new field is opened to the student when he learns to use the letters to represent quantities; hence, this part of algebra should not be neglected. A terminal course in algebra should so prepare the individual that he can continue study in his chosen field after he leaves school.

GEOMETRY

Some knowledge of the propositions of elementary geometry is useful to the skilled worker and is a necessity in certain trades such as sheet metal work and surveying. The geometry given in the senior high school is sufficient for most people. Construction problems are practical, though they should not be limited to the use of the ruler and compass as in pure geometry. In the shop and the drafting room, measuring scales, steel squares, protractors, and various other instruments are used in laying out work. Methods of using these tools could very well be taught to the student who wants practical applications of mathematics.

Mensuration of plane and solid figures should be included in terminal courses. Here again is an opportunity to develop skill in arithmetical computations and use of formulas.

Laboratory work can be made an interesting part of the teaching of practical geometry in which measurements are made and theoretical

propositions are applied. The use of measuring instruments can be taught in finding areas and volumes. Elementary surveying problems make excellent material for this work.

TRIGONOMETRY

For the terminal course in trigonometry much of the work that is now offered in the usual college course could be omitted, such as trigonometric identities, equations, and several solutions of the oblique triangle. Logarithmic solutions may also be omitted. It will be sufficient to teach the definitions of the six trigonometric functions, the solutions of the right triangle, the law of sines, and the law of cosines. This will equip the student to handle practically all the probems that he will meet, even in such fields as surveying and drafting.

MATHEMATICS OF INVESTMENTS

This is a subject which is a terminal course as it is now taught in most colleges. The information offered here should be obtained by everyone because it deals with problems that all persons meet when they earn and spend money. This course deals with such topics as interest, discount, annuities, installment buying, building and loan associations, sinking funds, and life insurance. It is inconceivable that a person could go through a normal life without having to deal with some of the problems considered in this course.

Installment buying is very common today; yet a large percent of the people who buy on the so-called easy payments plan do not know how to calculate the rate of interest that they are paying. The use of tables for finding compound interest and compound discount is simple and easy to learn; yet unless this method is learned in college most people will never know that such tables are available.

The determination of life insurance premiums seems to the average citizen to belong to the realm of higher mathematics; yet this is taught regularly to college sophomores. A study of this subject creates a better attitude toward insurance and retirement plans and leads to a more intelligent choice in the kind of policy that one may buy. The insurance salesman would receive information from a course such as this which would help him in his vocation. Although this is a terminal course, it can be taken by both the four year college student and the junior college student without changing its content. It is unfortunate that it is not more popular.

THE USE OF TABLES

So much practical work in the shop and the office is now done by tables that more emphasis should be given to this subject in schools. Tables are now published in nearly every field of applied work to lessen the amount of calculations. Handbooks for the different kinds of engineers and tradesmen contain tables useful in their particular work. In designing concrete and steel structures, navigating ships,

calculating interest, laying out railroad or highway curves, and in numerous other fields the use of tables is so helpful that the worker would not attempt to be without them.

The use of tables is now taught in such courses as trigonometry and mathematics of investments, and students taking these courses receive some good training in the use of tables. For those who do not study these subjects some instruction should be given in interpolation under the different conditions that may be found in various tables.

The use of charts and graphs is quite similar to the use of tables and complicated calculations can often be avoided by using charts. These aids are now published for use in many specialized fields, such as the designing of heating and cooling systems. Of course, these tables and charts do not solve the whole problem that an engineer may be working on, but they do cut down the labor considerably.

GRAPHICAL METHODS

Many problems in applied work do not require a high degree of accuracy, and their solutions can often be found by scale drawings. This is well illustrated by dead reckoning in navigating airplanes. The direction of the wind and the course of the plane are measured to the nearest degree, and, if the velocity of the distance is obtained to the nearest mile, that is close enough. A common problem in this field is the solution of an oblique triangle, when two sides and the included angle are given. This can be done by making a scale drawing with an ordinary protractor and a scale. Of course a certain amount of skill is required to construct these drawings, but this is easily acquired.

Graphical methods are used in many civil and mechanical engineering problems. The four year engineering student learns these methods when he studies such courses as graphic statics; some of this work could be introduced in a terminal course in junior college mathematics.

It is not advisable to teach all of the subjects mentioned here as separate courses. The course in mathematics of investments should be kept separate, and the others could be offered in one five hour course or two three hour courses. Enough time should be allowed for the student to really master each topic that is taught, instead of hurrying along as in a survey course.

Since the time is now ripe for some pioneering in junior college terminal courses, it is hoped that these suggestions may be of some help in outlining the desirable work in mathematics. These recommendations come from experience with college students and contacts with workers in various practical fields where mathematics is used.

Are You Putty in the Hands of A Salesman?

RUSSELL B. MYERS

"Why should I know anything about salesmanship?" "I don't plan to be a traveling salesman or a retail salesman." "I don't want to study salesmanship because I don't believe in high-pressure salesmanship." These and many other similar viewpoints are heard at every turn; one is likely to get the impression that salesmanship is only a tool for the active salesman.

Some advocate the study of buymanship and eliminate salesmanship altogether. They contend that every employer of a large number of employees has a special course that his newly chosen employees must complete before they are permitted to sell. This statement is not denied, but is must be remembered that this course is highly specialized and lacks many of the fundamental principles of sound salesmanship.

In attempting to show the need for a good understanding of salesmanship and marketing principles, a general discussion of two common problems of the average consumer will be given. The two problems referred to are the direct or house-to-house method of selling and the installment method of paying for purchases.

It is generally agreed that every man, woman, and child sooner or later becomes a salesman. A thorough knowledge and understanding of the subject serves as a good insurance policy against unscrupulous salesmen. In 1930 to 1933 the number of house-to-house salesmen increased approximately 300 per cent, which means that, where we previously had one, we now have four salesmen knocking at the front door at the rate of from two to five a day.

This direct type of salesmanship seems to be here to stay and has a definite place in the marketing organization because the sale of some products requires intensive salesmanship, demonstration, and educational work with the consumer. The house-to-house salesman meets the purchaser in her home and shows her exactly how she can use the product. It is not to be denied that consumers like this type of salesmanship, especially when buying household appliances; but they object to the undesirable type of salesman and the representative selling what they do not need or want. Sales talk is sometimes so convincing that it becomes almost impossible to refuse.

A recent survey made by Professor Bader[1] indicates the attitude of

[1]Bader, Louis, "Why and How Often do People Buy From Doorbell Ringers?" Sales Management, p. 368 Apr. 1, 1935.

the housewife toward house-to-house salesmen and gives the main reason for buying. Slightly more than 50 per cent of those interviewed stated they never bought. Of those who did buy, sympathy was given as their motive by the largest group; convenience was a low second, and a bargain was listed by only thirty-seven of the total 1120 interviewed. According to the expense figures published by the 1933 Census, direct selling was the most expensive type, representing 40.89 per cent of net sales. This seems to defeat the idea that this type of sale always means a bargain.

A proper knowledge of selling tactics and procedures causes one to investigate carefully and to be on the look-out for false representations and misleading information. In other words, the more one knows about a situation of which he is a part, the more intelligently he is likely to perform his obligations. There is great danger in over-buying today because the terms of payment seem very easy; unless one has the courage to refuse, he will soon discover that he has exercised poor salesmanship, or is it buymanship? Most authors contend there is little difference between the two terms.

An understanding of salesmanship envolves a knowledge of not only how to buy and sell, but a knowledge of how much one can afford to buy and be able to pay for. Competition sometimes causes merchants to become careless in the extension of credit and likewise lax in their collections. Mr. Lonergan cites some interesting and perhaps unusual instances found in a Nebraska city.[2] One man with an income of $90 a month was distributing his monthly income as follows: $39 for a car, $20 for a radio $15 for house rent, and $16 for food for a family of four. People, according to the report, would buy eggs on credit from the grocer, sell them to a produce dealer, cash the check at a filling station, using part of the money to buy oil and gas and the rest for the movies and ice cream. Conditions in this town eventually became so bad that the merchants finally went to the other extreme—a strict cash basis.

In the preceding extreme case both the merchants and the consumers were at fault. In modern business the average business man finds it necessary to do the thinking for most consumers when it comes to deciding whether or not they can afford to make a certain purchase. Of course with the keen competition and over supply in most retail lines, the dealer might decide the consumer is able to pay when he really has all he can carry. A good understanding of these principles on the part of the consumer would tend to eliminate such conditions as the one mentioned above and would also encourage more economical and wise spending of the family budget.

Installment selling came into use on a large scale in the United States soon after the World War as a means of disposing of surplus manufactured goods. During the war em-

[2]Advertising and Selling, p. 38, July 9, 1930.

phasis was on production and very little on methods of distribution because there was a constant demand for everything produced regardless of cost. When war ended, manufacturers didn't curtail production. Some couldn't curtail it because of the enormous investments and overhead expenses. They felt it was better to continue producing and to try to dispose of the surplus. By this method the losses wouldn't be as great, they thought, as they would be if they closed down entirely. The consuming public had the desire to buy, but not the means; hence in order to move merchandise, the installment method of payment was used on a large scale. This afforded only a temporary solution because there was a limit to the amount people could and would obligate themselves to pay.

The difference between installment and other forms of credit according to Professor Seligman[3] "is to be found in the fact that installment credit is to be liquidated piecemeal or in successive fractions instead of in a lump sum." Although this form of credit is based on trust and confidence in the debtor's ability and willingness to pay at the time and in the manner specified, the object sold is also typically utilized as a part of the security. The security is usually evidenced by a promissory note secured by a mortgage or trust certificate. This method of payment is used by consumers in practically all economic classes. The very poor and the very rich probably make little use of the plan; it is used most extensively by the great middle class.

The ease of buying and paying by this method appeals to many consumers. If they have a fairly steady and regular income, payments can be so budgeted that they can be made without inconvenience. When the buyers have reached the limit of their income to support further payments, purchases have to be curtailed until enough obligations have been liquidated to provide fresh purchasing power. This situation became prevalent in the early stages of the depression.

Some merchants and manufacturers learned from experience that the volume of sales of their products was increased through permitting the consumer to pay in installments. The press of competition forced the others to adopt the plan. The method probably promotes over-buying, especially during times of prosperity; it may change the flow of the demand toward some products, such as the automobile, radio, and electrical refrigerator and away from others not offered on this plan. This situation is more likely to be true during periods of prosperity than during other stages of the business cycle.

The effect of the depression period of the business cycle on the promptness with which installment payments are made is debatable. However, when credit stringency appears and the demand for labor begins to decline, the conservative buyer tends to curtail his purchases

[3]The Economics of Installment Selling Vol. 1

on the time-payment plan and liquidate his existing indebtedness as rapidly as possible. Some are able to continue their payments out of savings even though they may be temporarily unemployed. If installment sales are unwisely made, as was the practice of some firms in 1929, a major business depression will very likely force a large number of repossessions with loss to the selling firms. This situation does not necessarily arise when buyers are conservative, when sellers extend credit judiciously, and when the possibility of a coming depression is anticipated.

The Commerical Credit Company reported that on December 31, 1925, almost .5 per cent of its outstanding paper was more than 60 days overdue. That percentage rose above .8 per cent during the winter and stayed above .4 per cent the following winter until the middle of 1930, with more paper outstanding. The figure had gone above .25 per cent in only two months, and then only slightly—in February and March, 1930—and it had been as low as .1 per cent more than once. Repossessions for the first six months of 1930 remained below the figures for previous years. During the first eight months following the stock market panic of November, 1929, automobile sales dropped 30 per cent, yet the drop in dollars of installment financing of automobile sales was only 17 per cent, while the financing of the sale of used cars increased. The Federal Reserve Bank of Boston reported more than a normal increase in installment sales of all kinds in its district during the first six months of 1930. If these data are at all representative, it would appear that installment sales are not materially reduced during the first stage of a major business depression.

Installment selling probably does no more to stimulate ill-advised purchasing and over-buying than many forms of advertising and salesmanship. Some people apparently can't resist, the offer of "free" deals, quantity discounts, special services, and a number of other constanly used schemes. We are justified in accepting the installment plan as a useful element in our marketing system, but we should not overlook possibilities of abuse and misuse. The character of the results secured from using this method depends upon the judgment exercised by the consumer in obligating himself and the care exercised by the seller in administering the plan.

There are certain fundamental factors that must be considered if installment selling is to be kept on a sound basis. These factors are concerned with the purchaser, the product sold, and the terms of the contract. Even though the commodity is used as partial security, the character of the individual purchaser is considered. The justification for installment purchasing is a need for the product and the ability to pay the installments from current income. Due consideration is given to the buyer's other obligations; to the possibility of accident, illness, and

involuntary unemployment; and to whether the purchaser has financial reserves, such as savings account, accident, fire, life insurance, and sources of income other than his salary or wages.

There are individual buyers who place the burden of determining the limit of their purchases upon the seller. They will, in other words, buy as much on credit as merchants will agree to sell. They follow the policy of "letting the other fellow worry." The effective operation of modern credit bureaus has reduced the damage formerly done by this class of buyers. The one furnishing the credit has to offset the lack of sound judgment and investigating his character, moral standing, place of residence, occupation, length of time in present position, number of dependents, and other facts that may indicate his present and continued ability and willingness to meet his obligations according to contact. Some persons resent the fact that all these questions are asked and consider them a reflection upon their character or credit standing. But as time goes on the consumers realize that this is one reason the finance companies have been able to lower their rates in the last few years and that it is only a matter of careful business procedure to investigate carefully before extending credit.

Accounting as an Aid to the Administrator

HAROLD M. PERRY

The subject of school finances is attracting more and more attention regarding both income and expense. It is evident that school systems must now make a closer accounting of all the school funds and must make the dollar buy the greatest possible amount of education.

Almost every day newspapers carry the story of some school system which has been forced to close because of financial difficulties. Just what the trouble is, perhaps, is not generally known, but a huge deficit has been forced upon a school district unable to operate on its current income. The situation comes as a surprise to most people, who have not been informed that the school district has been approaching bankruptcy. When this condition arrives, the public has to accept it, even though it is hard for the public to face.

Everyone is aware that school income has decreased during the last few years. This is probably due to two general reasons. First, because of the general economic conditions people have lost to some extent their ability to pay. Second, the valuation of various school communities has decreased considerably, so that now some communities are getting less than half the amount they were getting some years ago. This has been partially offset by increased state aid, but the state program is still in its infancy. Despite the smaller income more boys and girls are in school, since they cannot find a place in the business world.

In checking over the accounting of the money spent for education, we must not forget that it must contain more than just the information on teachers' salaries, which have been emphasized in the past as the principal item in the cost of education. A careful study will show that other elements must be included in the reporting of educational costs.

Administrators are agreed that school systems have to be operated on a budget system, and, before budgets can be prepared and submitted to the proper groups, the anticipated income must be carefully checked. If the income of the community is steadily decreasing, it is necessary for the administrator to visualize this fact and to make his plans for the future.

Now what will be his plans? How will he meet this situation which involves the financial structure of his school organization? Will the teacher personnel be reduced in number? Will the teaching staff be required to take reductions in salary for the coming school term? How much opposed to such a method are the people? Will courses be struck

from the curriculum, or will the administrator warn his board and the public of the situation by a series of talks or published articles? In other words is the school leader laying the foundation for a future vote on a tax increase for school operation? If the public is informed of the need and is presented with the facts, it will react favorably when a tax increase for school purposes is put to a vote.

How can the public be informed? First, the teaching staff should be given the financial facts first-hand by their superior so that they can converse intelligently with their friends about the situation. Second, the superintendent or principal can give talks to local civic clubs and organizations. Contacts can be made with parent-teacher associations, and they in turn can relay the information to the people. And last, a series of well prepared articles can appear in the local paper or can be broadcast if radio facilities are available. Before this program can be followed, the administrator must be prepared to make such a plan function. He must have a knowledge of accounting.

With this knowledge he is able to prepare his budget properly and intelligently. He is in constant touch with the tax situation in his community and knows whether or not the next year's tax collections will support his budget. He can justify the cost of any part of his curriculum by presenting figures as to the cost of instruction of this or that subject matter. Professionally, of course, he can justify the need of any course; therefore, the cost is justified. But that is not enough. A knowledge of accounting enables an administrator to tell his public and board what it costs per pupil to operate in a general way or by departments. When this figure has been calculated, it can be compared with figures of similar reports from other communities.

This need for the administrator to be trained in finances is one of recent years. Formerly, ample funds were available for schools, and budgeting was not necessary, although proper. Records were kept for cash receipts and cash disbursements, but the anticipation of revenue was not such a necessity as it is today.

Let us go back a few years and trace the need of accounting training on the part of the school executive. Years ago there was the little red schoolhouse by the side of the road with its one room to care for the boys and girls in that particular area. One teacher would mother the students up through the entire eight grades and would then send them on to the high school of that district. From the standpoint of finance, it was a simple procedure to care for the expenditures of this historical building. The salary of the teacher, a very few supplies, and a little fuel were the limit of the expenses. Even the fuel, in the form of wood, was sometimes donated by some close-by interested citizen. Let us compare this building with the rural school of today. I believe Mr. Billingsley, county superinten-

dent of Reno County, Kansas, does it very well:

"The little red schoolhouse isn't what it used to be; neither is it little or red.

"Today's farm mothers and fathers, whose bones still ache when they remember the winter days spent in the little red schoolhouse where the temperature was barely above freezing when classes convened and never reached 70° by dismissal time, find it difficult to visualize the changes in rural districts.

"Reno county has dozens of rural schools with modern heating and lighting. One, in the oil field near Haven, has thermostat controlled gas furnace, electric lights, sound motion picture equipment and a kitchen fully equipped. Many others have furnace heat with either gas or oil. Electric lights will be extended to many more with completion of two large rural electrification projects. Many have radio receivers.

"Hot lunches are served at fully half of the rural schools today. A survey recently completed of eighty-five one-teacher schools found a marked tendency to improve the educational facilities. Some districts have added music, sewing, and woodwork to their curriculum."

All of these newer additions to the older system demand that a more complete record be kept of the cost involved, specifying for what the dollar is spent. This report gives just a faint idea of the increased need for a knowledge of accounting in order to keep accounts for rural school systems. This system, I believe, is the least complicated of all school systems. It was rather easy to figure the cost of the one-room school or a single school, since no consideration was given overhead or apportionment of charges. After the one-room schoolhouse passed, the new school harbored from four to eight grades under one roof and offered an increased number of subjects. Many changes also took place in the junior and senior high schools.

Let us now look at the high school development. Everyone knows of the first high school and the opportunities it offered. Rather limited were the facilities to teach the boys and girls of those early days. Then progress began. Not only did the interior of the classroom change to a number of class units, but a change also took place in the personnel of the teaching staff. Administrators, supervisors, principals, health officers, and others were added to further complicate the cost problem.

H. H. Davis[1] says in his school study that the public school, whether one-room, rural, village, consolidated, or high school, has four universal components: pupils, teacher, setting (room and equipment), and some educational supplies.

All of these facts lead to the conclusion that a strict accounting plan must be in force in all school systems and that the better-trained administrator will keep his records in a more efficient manner.

All money spent should contri-

[1]H. H. Davis, Auditor State Department of Education, Ohio, 1932.

bute in some way to a student's schooling and, to be justified by the school authorities, must aid in one of four divisions; namely, pupils, teacher, room, or supplies.

BUDGET DIVISION

The various divisions and subdivisions will now be considered in the order mentioned in Bulletin No. 24 by the National Education Association, *Relative Costs of School Subjects,* Washington, D. C., 1927. Under the heading of general control might be mentioned these expenditures: school elections, board of education and secretary's office, finance offices and accounts, officers in charge of buildings, officers in charge of supplies, legal services, operation and maintenance of administration building, superintendent of schools and office, administration of vocational relations and school census, administration of co-ordinate activities.

Under the division of instruction might be listed these items of expense: supervision, administration, clerical service, teachers' salaries, educational supplies.

Under the division of co-ordinate activities are found: compulsory attendance and health service.

Under the division of auxiliary agencies come the following: libraries, transportation, care of children, pupil lunches, adult education, playgrounds.

Under operation of plant are the following: janitors' wages, fuel, supplies, etc.

Under the fixed charges would come rent, insurance, and taxes. This last division might include maintenance of the plant. All of the expenses of maintenance are for the purpose of improving the setting for educational effort and should be charged to that department.

This explanation merely gives a fairly adequate idea of the accounts necessary to carry on a school system and the proper division of them. Most of the state departments of education have provided their county superintendents with uniform blanks to report costs so that the final results will be more or less standardized. Similar blanks are sent to the secretaries of boards of education so that reports demanded will include the same analysis of costs and be interpreted in the same way. School authorities have accomplished that one thing, a standard division of costs.

Earlier in this discussion it was mentioned that income has dwindled considerably and the schools have today less money on which to operate. The reason for this decrease has also been discussed. Let us now take some specific facts. In Crawford county, for example, the tax revenue for school purposes decreased from $732,000 in 1930 to $394,000 in 1939. State aid has brought this deficit up somewhat but not nearly enough to offset the difference.

The table on page 186 shows the tax revenue of Crawford County for the ten year period.

This tax tabulation is self-explanatory and shows that the money received from taxation for school purposes has decreased almost

COMPARATIVE STATEMENT OF TAXES OF CRAWFORD COUNTY, KANSAS, FOR YEARS SHOWN[2]

Year	Amount for educational purposes	Amount for school bonds and interest
1939	$394,378.95	$111,572.60
1938	427,368.50	125,046.35
1937	445,959.17	109,304.13
1936	441,121.66	90,560.56
1935	440,005.88	123,285.58
1934	435,690.10	140,521.19
1933	421,524.04	163,281.84
1932	570,058.39	109,452.80
1931	685,870.22	141,706.21
1930	732,107.97	146,980.04

constantly since 1930. Other communities have experienced the same reduction and have tried to meet the situation in various ways. They have offset this deficit by making application for state aid, increasing the tax rate, which is most difficult, or cutting down overhead expenses such as teachers' salaries, courses offered, educational supplies, and extracurricular activities. By some of these measures the budget will be brought within the limits of the income received.

Newspapers reported that Toledo, Ohio, schools were closed almost four weeks prior to the last holiday vacation. This shutdown was caused by the lack of necessary funds needed to operate the school system. The schools resumed classes after the beginning of the new year.

Rockford, Illinois, a town of nearly one hundred thousand, is approaching a most tragic situation in its schools financially. The board of education faces a huge deficit the coming year and has had one suggested tax increase voted down. In the face of all this, Rockford has under construction at the present time two new senior and one junior high school buildings. Obviously school operating costs will climb with the opening of these new buildings. How will this community meet its discouraging problem?

Another Illinois community somewhat smaller than Rockford, however, is facing quite a similar crisis. The teachers have not been paid during the entire school year, there has been no money to meet the necessary operating expenditures, three new boards of education have been elected in the last six months. Each new board carefully studied the problem but, finding no solution, resigned.

Kansas City, Missouri, presents another school problem that is familiar to those interested in school affairs. A survey referred to as the "Griffenhagen Report" has just been completed and the findings are most interesting. "Much revenue has been lost through faulty administration, experts agree,"[3] is one of the first statements made by the educators.

The report further states: "A thorough study of all school income data for the last five years convinced the surveyors that, excepting marked change in economic conditions, the income of the district next year will be between $4,660,500 and $5,338,600.

"This did not indicate more than a long chance that the income next year would be adequate to meet the estimated requirement, which is

[2]Report from the county clerk's office, Girard, Kansas, January 26, 1940.

[3]Kansas City Star—March 3, 1940.

only $69,414 below the most optimistic estimate.

"Griffenhagen does not see a possibility of full salary restoration to 1938-39 levels except by increasing the present 9-mill levy to 9½ mills with about 72 per cent collections. This might not be necessary if tax conditions continue to improve.

"Educators believe a 10-mill levy is essential to halt the backward trend of the schools, restore salaries, keep school going ten months, and provide necessary books and equipment."

Similar financial trouble is being experienced by many school communities all over the country. Each group will have to master its problems by proper analysis of the facts. It must be understood that all of the communities have their local and individual problems and must work them out. However, this does not mean that other communities with similar experiences successfully met cannot offer suggestions as to how they coped with their problems.

All of this information leads to the conclusion that administrators can perform their duties much more efficiently if they have had some accounting experience. Better relationships and more confidence will be established between board and administrator if the administrator submits well-planned budgets and regular financial reports. A good administrator must be an educator, a financier, a good-will ambassador, and a personnel genius. If he has these qualifications with a fine personality he, no doubt, will enjoy much success in his position.

RECOMMENDATIONS

In making the final recommendations to school administrators, there are a few things that must be kept in mind. First, the cost of any class instruction is in the hands of the administrator. He has in his power control over enrollment, teachers' salaries, and the place of the instruction. Whether or not the community can finance various classroom aids must be determined by this individual.

Second, rather than determining the cost of instruction on the basis of the salaries paid to the instructors only, it is better to consider the entire expense of the school set-up. By so doing, all classes will assume their share of the overhead, which includes administration, operation, maintenance, auxiliary, general control, interest charges, and fixed charges. If the administrator is trying to find the cost of a class or of all classes, why not compute the actual cost and not just a part of it?

Third, one of the most important duties of the administration is to tell the community for what phase of education the money is being spent. It is much better to inform the board officials and the general public that it costs a certain amount for science and a certain amount for bookkeeping instruction than to say that the cost of education in a given community was so much per pupil the past school year. The community is entitled to know more than that. To fulfill this obligation, it will be necessary to work out a method of cost computation that

can be used in a system of any size. Then a means of comparison will be provided.

It is recommended that the system of cost analysis for schools be uniform. It is believed that the same method can be applied to any system regardless of size for the following reasons:

1. It is true that the larger the school the more the overhead expenses that must be assumed, but it is also true that as the overhead in the larger communities increases the enrollment also increases. When cost is computed on a pupil basis, the results will be about the same.

2. It is true that in most of the larger school districts there is a salary schedule of rather fair means. On account of the large enrollment in these communities the better salaries would have little effect on the final outcome of the cost analysis.

3. It is also true that the larger school systems require more money for administration and supervision. Also, more courses and activities might be offered in the curriculum, but again the enrollment would balance the per pupil cost. The large number of teachers would allow the school to offer more subjects.

4. Last, if the administrator told his board and his community that it cost so much to teach each of the classes offered during the past year, the administrator would have justification to offer more or fewer classes in this particular field. If the cost were not too high, the community would agree that a broader educational offering could be given its children. To furnish this information to the general public there must be facts.

5. To tabulate and to present these facts one must first have the ability to consolidate them and also to interpret them. Accounting knowledge on the part of the school manager enables him to become more closely associated with his board and public and to observe financial conditions in the future as well as at the present. The school man must look ahead.

COMMENTS ON BOOKS

A Goodly Fellowship
by MARY ELLEN CHASE
Macmillan, 1939

The title, taken from the *Te Deum,* "the goodly fellowship of the prophets praise Thee," refers to teachers and the profession of teaching. It is but one example of the many apt quotations which Mary Ellen Chase uses and reiterates throughout the book, giving them the force that Matthew Arnold gave to phrases by judicious repetition. The good teacher comes to his "task as to a sport," she quotes from Charles Lamb; " Life is a pure flame, and we live by an invisible sun within us" (Thomas Browne); "*Haec olim meminisse*" (I shall take pleasure in remembering these things hereafter) from Virgil; or, in her own words, "The teaching of English is more fun to do than anything else in the world." These phrases set the tone of the book, a tone of gusto, of pure joy in her work.

Yet this autobiographic narrative of her teaching and study shows us that Miss Chase's life was beset with many difficulties. She takes everything in her stride, from the first district school she taught; on through an Arcadian picture of a boarding-school in Wisconsin; her life at Miss Moffat's school in Chicago, where a Dickensian setting is combined with a headmistress possessed of a Carlylean sense of duty; a trip to Europe managed with almost no money; a long illness financed, taking her to Montana for her health; on through graduate school at the University of Minnesota; and finally to her present position at Smith College at Northampton, Massachusetts.

Miss Chase (I should be calling her Dr. Chase, but one grows up with her during the book and so thinks of a person, not of a title) includes names of people who were her professors and associates, and discusses freely their personalities. So beautiful has her pilgrimage been along life's road that she will have no libel suits for the use of their names. Was it Mark Twain who grew weary of the spiritualist's reporting everyone who had gone to the Great Beyond as saying that "everything was bright and beautiful"? Perhaps her paeans of praise may pall a little here and there. For example, she sets out to say how devoid of life and good teaching are the graduate schools, but hastens to add that her remarks, though true of most graduate schools, were not at all true of the one she attended.

I suppose that teachers, like other people, frequently have ungrounded prejudices; perhaps we should allow Miss Chase to cherish hers without comment. But one cannot help won-

dering why throughout the book, wherever occasion offers, she directs her criticism against Education Departments and teacher-training institutions, the one phase of work which did not come within her varied scope of experience and about which she admittedly knows nothing.

A Goodly Fellowship is a good book, full of interesting, sometimes humorous, experiences, well-told. For its high ideals and its love for an old and honorable profession, it is recommended reading for everyone and should be on a required list for English majors.

Walter Pennington.

Contributors to This Number

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